ESTO / Advanced Information Systems Technology

SEEDS Technology Plan

Presented to:
SEEDS Workshop
February 5, 2002

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SEEDS Technology Needs and Infusion Plans

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Purpose of Study

- Determine processes by which technology needs are identified and technology investments are infused into the evolving SEEDS
  - Leverage ESTO AIST processes
  - Involve ESE user community
- Determine roles of ESTO AIST and SEEDS with regard to prototyping needs

Approach

- Evaluate the ESTO AIST strategic planning process to assess applicability to SEEDS to support technology needs and investments
- Articulate a SEEDS technology planning process
- Get SEEDS representation at the annual ESE AIST Projections Workshop
  - Review technology needs database
  - Identify technology projections (what & when)
- Work with Standards & Interfaces for Future ESE Missions study group to develop SEEDS technology infusion plan
  - Research "best practices"
  - Investigate procurement options

Schedule

- Identify preliminary list of NewDISS technology drivers — 11/06/01
- ESTO Technology Workshop scheduled at BWI Marriott — 01/9-10/02
- Develop draft technology plan — 02/01/02
- Identify draft approach to SEEDS technology infusion — 04/01/02
- Technology Development and Infusion Plan — 06/30/02

Status

- Held Workshop Jan. 9-10, 2002 and currently analyzing inputs

» Feb. 5, 2002

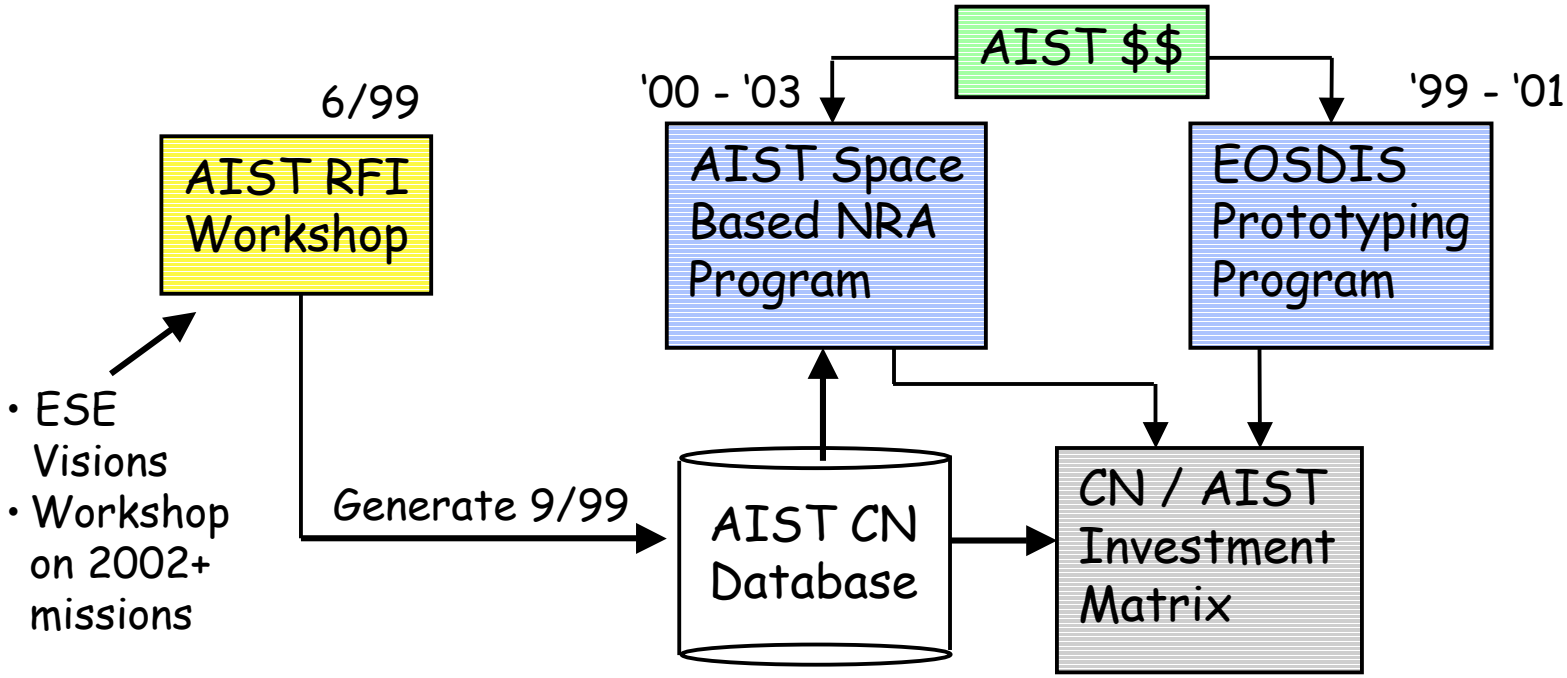
Advanced Information Systems Technology

AIST Program Objectives

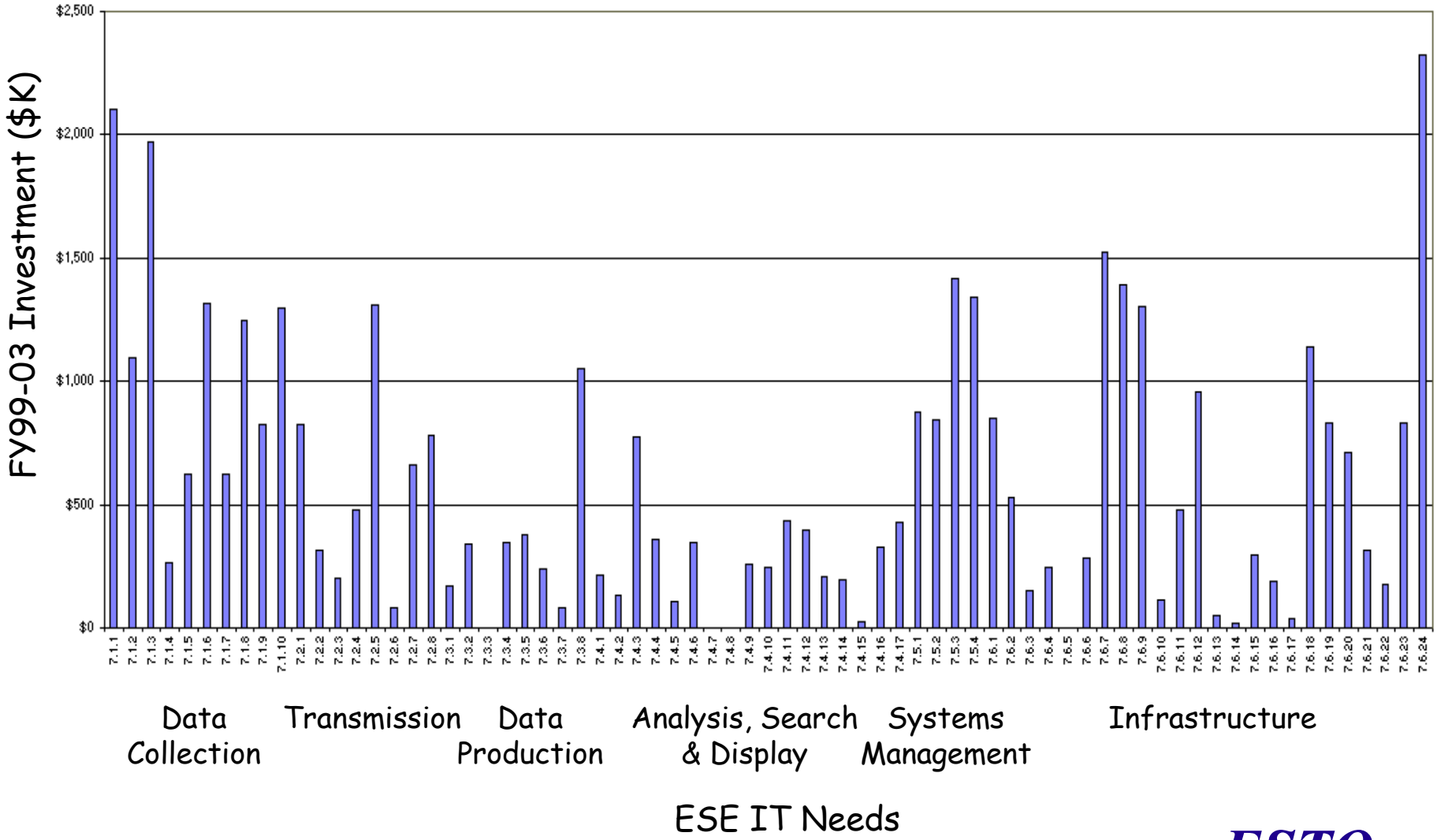
- To identify, develop and (where appropriate) demonstrate advanced information technologies which
  - Reduce the risk, cost, size, and development time of NASA Earth science systems,
  - Increase the accessibility and utility of Earth science data, and
  - Enable new Earth observation measurements and information products

- These objective align with SEEDS goals

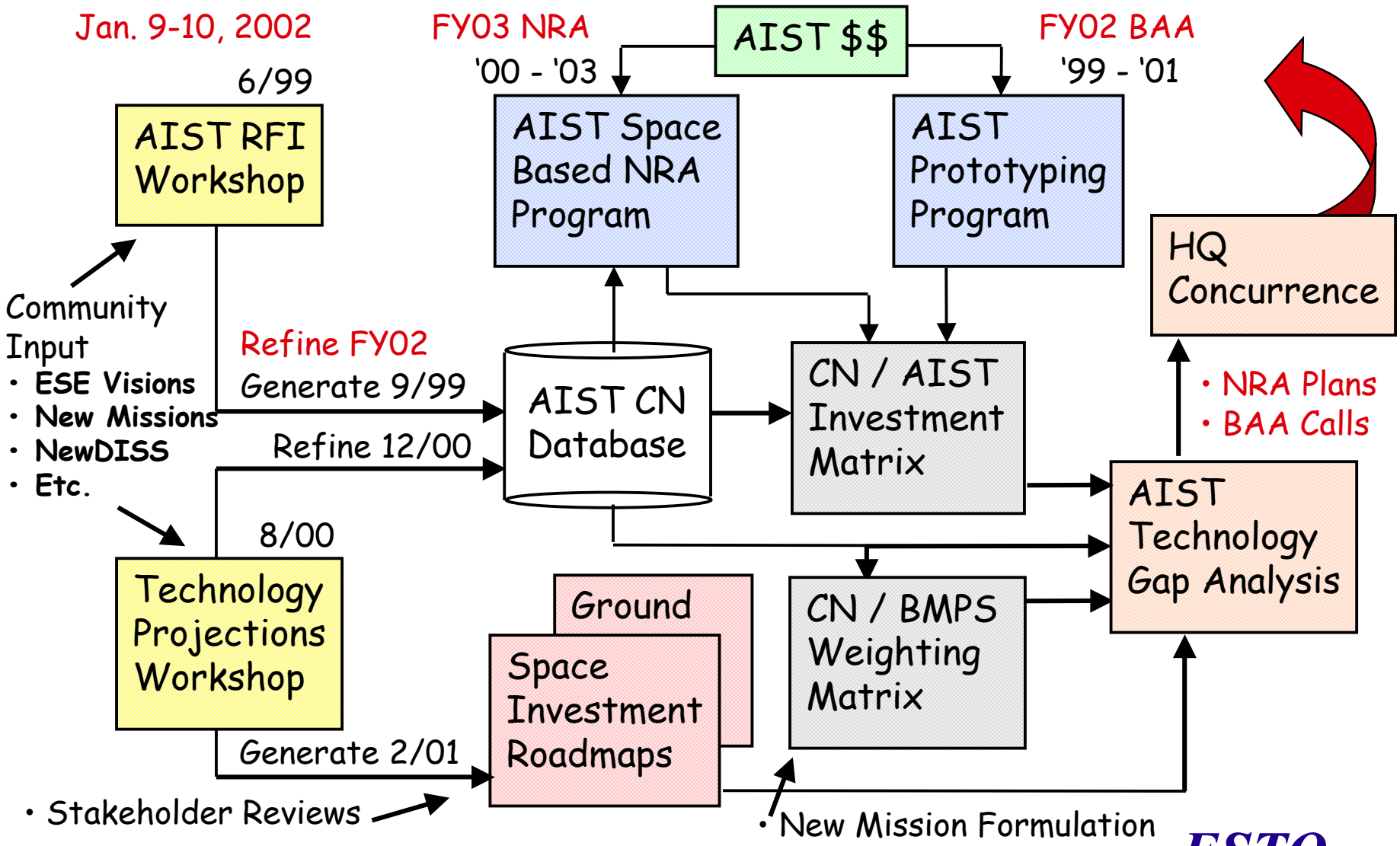
AIST Strategic Planning Process



AIST FY99-03 Investment Analysis



AIST Strategic Planning Process Overview



AIST Key Themes

Ground-Based Investment Themes

- Knowledge Extraction Capabilities
- Earth Science
  - Data & Service Representation
  - Interoperable Framework
  - Information Access & Delivery
- Data Product Planning & Scheduling
- High-Performance Evolvable Archives

Space-Based Investment Themes

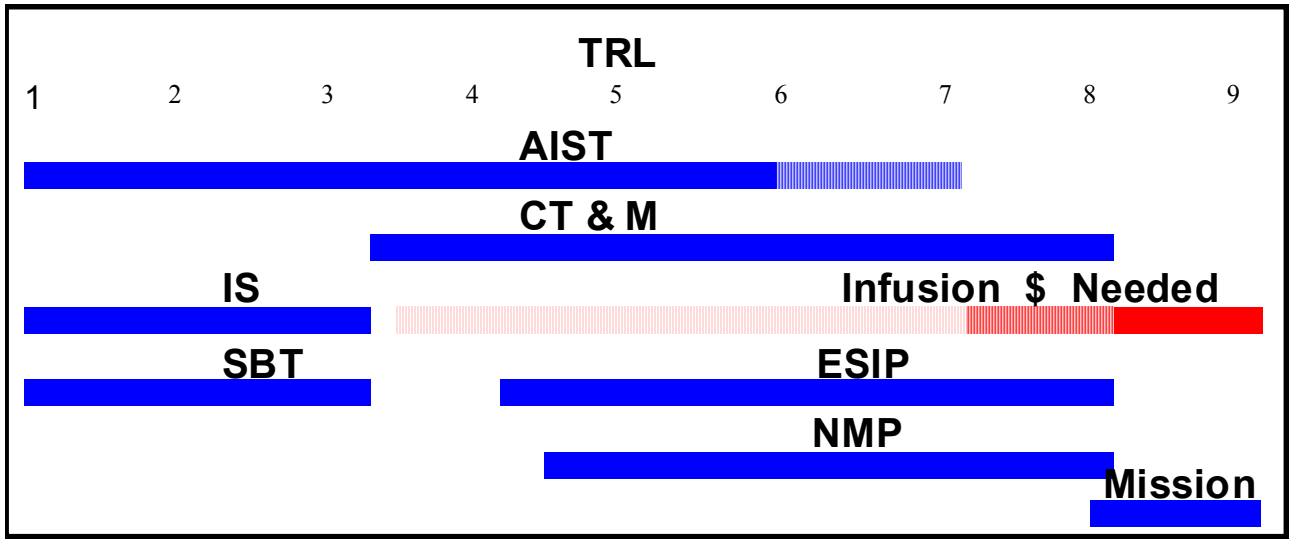
- High Data Rate Communications
  - Lossless & Lossy Data Compression
- Onboard
  - Microprocesser, Board & Bus Technology
  - Satellite IP Network
  - Storage Architecture
- Navigation Technologies
- Intelligent Platform and Sensor Control

- Many themes align with SEEDS goals
- Anticipate more detailed, specific technology needs to surface

NewDISS & EOSDIS Review Observations

- Increase community involvement
- Increase visibility into technology results
  - Aid value assessment of technology to mission / system
  - ESTO involvement in mission formulation teams
- Need more effective technology infusion paths
  - Need end-to-end process for timely infusion
  - Especially critical given Moore's law for technology performance trends

TRL Transition - Technology to the User



- Goal: No more "orphaned technology" (proven technology that was a great idea but not mature enough for anyone to use)
- Infusion plan must be identified at the start of a new project
- Must find way to fund "technology infusion gap" between TRL 6/7 and 9
  - Collaboration needed between technology developers and customers
  - Projects must have technology infusion budget to mature/adapt technology

Tech Infusion Challenges

- Technology Provider
  - Must understand ESE mission / data needs
  - Develop skills to communicate with users (speak customer's lingo)
  - Understand user's operating environment
    - Identify appropriate (and enthusiastic) users
    - Tailor cost / benefit analysis to user's domain
  - Work jointly on estimating risks (don't oversell new capabilities)

- Technology User
  - Engender "Out of the box" understanding of operational environment; open to new ideas / invest time to listen
  - Develop realistic approach to risk evaluation (avoid unsubstantiated fear of the "new")
  - Need awareness of emerging technologies and their potential capabilities and benefits
  - Need budget for infusing / adapting technology

Next Steps

- Workshop — January 9-10, 2002 @ BWI Marriott reviewed
  - Technology Themes
  - AIST Needs Database

  Analysis in progress; database update planned for Spring 2002

- SEEDS Technology Infusion Plan — Recommendations welcome
  - Best practices & contacts with successful infusion experience
  - Methods for risk assessment (cost/benefits) and success metrics

- Prepare for AIST NRA solicitation to be released in mid 2002
- Prepare Broad Agency Announcement for quick response technology initiatives
- Evolve ESTO Technology Infusion Plan in FY02